

CLAIMS

We claim:

1. A device for removing body tissue, comprising:
a brush member dimensioned for introduction into a body, said brush member
5 having a plurality of bristle members defining a capacity for carrying body tissue,
said brush member capable of being manipulated within said body to thereby
receive body tissue within said brush member such that said body tissue may be
carried and thereafter removed from said body.
- 10 2. The device of claim 1, wherein said capacity for carrying body tissue is
defined by at least one of the space between said bristle members and the space
between groupings of said bristle members.
3. The device of claim 1, wherein said bristle members are grouped to define
15 at least one generally helical space for receiving and carrying body tissue therein.
4. The device of claim 1, wherein said bristle members are grouped to define
at least one generally axial space for receiving and carrying body tissue therein.
- 20 5. The device of claim 1, wherein said bristle members are grouped to define
at least one generally arcuate space for receiving and carrying body tissue therein.

6. The device of claim 1, wherein said bristle members are disposed in a generally solid configuration with spacing sufficient to receive and carry body tissue between said bristle members.

5 7. The device of claim 1, wherein said brush member has at least one of a generally cylindrical, generally elliptical, and generally polygonal cross-sectional shape.

8. The device of claim 1, wherein said brush member is generally cylindrical
10 and has a diameter from 0.082 to 1.225 inches.

9. The device of claim 1, including a stem member extending from said brush member for use in manipulating said brush member within said body.

15 10. The device of claim 9, wherein said stem member is generally cylindrical and has a diameter from 0.125 to 0.250 inches.

11. The device of claim 3, wherein said stem member is equipped with a quick-connect coupling for engaging with at least one of a handle member and an
20 extension member.

12. The device of claim 9, wherein at least a portion of said bristle members are retractable within said stem member.

13. The device of claim 9, wherein said stem member has a length of from 1 to 24 inches and includes depth indicia.

5 14. The device of claim 1, wherein said bristle members comprise one of metal and plastic.

15 15. The device of claim 1, wherein said bristle members comprise one of stainless steel wire, carbon-tempered steel wire, non-ferrous wire, and synthetic
10 wire.

16. The device of claim 1, wherein said bristles members are generally cylindrical in cross-section with a diameter from 0.002 to 0.100 inches.

15 17. The device of claim 1, wherein said brush member is dimensioned to be introduced into an intervertebral space to receive, carry, and remove intervertebral disc material.

20 18. The device of claim 17, wherein said brush member is used to remove intervertebral disc material in order to thereafter introduce a spinal implant into said intervertebral space.

19. The device of claim 1, wherein said brush member is dimensioned to be introduced into a vertebral body to receive, carry, and remove osseous material.

20. A system for removing body tissue, comprising:

- 5 a brush member dimensioned for introduction into a target site within a body, said brush member having a plurality of bristle members defining a capacity for carrying body tissue, said brush member capable of being manipulated within said body to thereby receive body tissue within said brush member such that said body tissue may be carried and thereafter removed from said body; and
- 10 a protector dimensioned to be positioned near an entrance into said target site, said protector establishing a barrier between said brush member and at least a portion of the body tissue adjacent to said entrance.

21. The system of claim 20, wherein said protector comprises a cannula

15 dimensioned to extend to said entrance of said target site, said cannula having an inner lumen dimensioned to slideably receive said brush member for passage into said target site.

22. The system of claim 21, wherein said cannula includes a handle member

20 for directing said cannula to said entrance of said target site.

23. The system of claim 22, wherein said brush member includes a stem member, and further comprising a drive assembly capable of engaging with said stem member for manipulating said brush member within said target site.

5 24. The system of claim 23, wherein said drive assembly comprises one of a powered drive assembly coupled to said stem member and a manual drive assembly coupled to said stem member.

10 25. The system of claim 24, wherein said powered drive assembly is a power drill.

26. The system of claim 24, wherein said manual drive assembly includes a handle member capable of being coupled to said stem member.

15 27. The system of claim 26, wherein said manual drive assembly includes an extension member coupled to said handle and a quick-connect coupling assembly for releasable connection to said stem member.

20 28. The system of claim 24, wherein said drive assembly includes a stop member coupled to said stem member for controlling the depth to which said brush member can be advanced into said target site.

29. The system of claim 21, wherein said body tissue adjacent to said entrance includes at least one of neural tissue, dura tissue, and vasculature adjacent to the spine, and wherein said cannula includes a lip member at a distal end thereof dimensioned to retract at least one of said neural tissue, dura tissue, and
5 vasculature.

30. The system of claim 21, wherein said inner lumen of said cannula and said brush member have approximately the same cross-sectional shape.

10 31. The system of claim 20, wherein said protector comprises a retractor having at least one blade member for establishing a barrier between said brush member and said body tissue adjacent to said entrance.

32. The system of claim 31, wherein said body tissue adjacent to said entrance
15 includes at least one of neural tissue and dura tissue of the spine, and wherein said retractor includes a first blade member for retracting said neural tissue and a second blade member for retracting said dura tissue.

33. The system of claim 32, wherein said first blade member and second blade
20 member have a fixed angle therebetween.

34. The system of claim 32, wherein said first blade member and second blade member have a variable angle therebetween.

35. The system of claim 34, wherein said retractor includes a handle assembly for varying said angle between said first blade member and said second blade member.

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36. The system of claim 20, wherein said target site is an intervertebral space, and wherein brush member is dimensioned to be introduced into said intervertebral space to receive, carry, and remove intervertebral disc material.

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37. The system of claim 36, wherein said brush member is used to remove intervertebral disc material in order to thereafter introduce a spinal implant into said intervertebral space.

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38. The system of claim 20, wherein said target site is a vertebral body, and wherein said brush member is dimensioned to be introduced into said vertebral body to receive, carry, and remove osseous material.

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39. The system of claim 20, wherein said brush member and protector may be employed to remove body tissue during at least one of a percutaneous surgical procedure and an open surgical procedure.

40. A method for removing body tissue, comprising the steps of:
creating a working channel from a patient's skin to a surgical target site;

inserting a brush member into said surgical target site, said brush member having a plurality of bristle members defining a capacity for carrying body tissue; manipulating said brush member within said body to receive body tissue within said brush member; and
5 removing said brush member from said surgical target site.

41. The method of claim 40, wherein said step of creating a working channel to the surgical target site is accomplished via at least one of a percutaneous surgical procedure and an open surgical procedure.

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42. The method of claim 40, wherein said surgical target site is an intervertebral disc space, and wherein said step of inserting a brush member includes, prior to said step of inserting said brush member, positioning a protector near an entrance into said intervertebral disc space for establishing a barrier
15 between said brush member and at least one of neural tissue, dura tissue, and vasculature adjacent to said entrance.

43. The method of claim 42, wherein said protector comprises a cannula dimensioned to extend to said entrance of said intervertebral disc space, said
20 cannula having an inner lumen dimensioned to slideably receive said brush member for passage into said intervertebral disc space.

44. The method of claim 40, wherein said brush member includes a stem member, and further including the step of providing a drive assembly capable of engaging with said stem member for manipulating said brush member within said target site.

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45. The method of claim 44, wherein said drive assembly comprises one of a powered drive assembly coupled to said stem member and a manual drive assembly coupled to said stem member.

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46. The method of claim 45, wherein said powered drive assembly is a power drill.

47. The method of claim 45, wherein said manual drive assembly includes a handle member capable of being coupled to said stem member.

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48. The method of claim 47, wherein said manual drive assembly includes an extension member coupled to said handle and a quick-connect coupling assembly for releasable connection to said stem member.

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49. The method of claim 45, wherein said drive assembly includes a stop member coupled to said stem member for controlling the depth to which said brush member can be advanced into said target site.

50. The method of claim 43, wherein said cannula includes a lip member at a distal end thereof dimensioned to retract at least one of said neural tissue, dura tissue, and vasculature adjacent to said spine.

5 51. The method of claim 43, wherein said inner lumen of said cannula and said brush member have approximately the same cross-sectional shape.

52. The method of claim 42, wherein said protector comprises a retractor having at least one blade member for establishing a barrier between said brush
10 member and said body tissue adjacent to said entrance.

53. The method of claim 52, wherein said body tissue adjacent to said entrance includes at least one of neural tissue and dura tissue of the spine, and wherein said retractor includes a first blade member for retracting said neural
15 tissue and a second blade member for retracting said dura tissue.

54. The method of claim 53, wherein said first blade member and second blade member have a fixed angle therebetween.

20 55. The method of claim 53, wherein said first blade member and second blade member have a variable angle therebetween.

56. The method of claim 55, wherein said retractor includes a handle assembly for varying said angle between said first blade member and said second blade member.

- 5 57. The method of claim 40, wherein said surgical target site is a vertebral body, and wherein said brush member is dimensioned to be introduced into said vertebral body to receive, carry, and remove osseous material.